

## City Policy for Exterior and Site Lighting

**PURPOSE:** *Encourage quality site lighting design while providing a sense of safety and security by reducing excessive light levels, light trespass, and glare.*

### DESIGN PRINCIPLES:

- The use of lighting should be integrally designed as part of the built environment and should reflect a balance for the lighting needs with the contextual ambient light level and surrounding nighttime characteristics of our community. Recommended light level guidelines and uniformity ratios established by the Illumination Engineering Society of North America (IESNA), in the IESNA Lighting Handbook (current edition), should be considered when determining appropriate lighting design solutions. All exterior lighting design requires the approval of the Development Review Board (DRB)
- Lighting designs should be designed to minimize glare, light trespass, energy conservation, and to maintain dark skies. The lighting designers should consider utilizing pre-curfew and post-curfew lighting designs with automatic controls systems to eliminate excessive light during non-active hours of site and building operation.
- Full cut-off fixtures, mounting heights, and shielding should be utilized to effectively control glare and light trespass.
- Any exterior lighting designs shall take into account all exterior lighting sources.
- Architectural lighting if proposed shall be included with the DRB application. Architectural lighting if proposed should only be utilized to highlight special features. Lighting of expansive wall planes, towers, and roofs or the use of architectural lighting that results in "hot spots" should be avoided.
- Landscape lighting if proposed shall be included with the DRB application. Landscape lighting should only be utilized to accent landscaping, be pointed away from the property line, and fixtures shall contain extension shields to minimize glare and light source visibility.

Illuminance Recommendations		
Ambient Light Level *	Recommended Maintained Footcandles <i>(based on IESNA RP-20-98)</i> <i>(horizontal fc measured at grade)</i>	
	Average	Maximum
E-1 – Intrinsically Dark Areas	1	4
E-2 – Estate/Rural Areas	1.5	6
E-3 – Suburban Areas	2	8
E-4 – Urban/Pedestrian Activity Areas	2.5	10

Light Trespass Limitations	
Ambient Light Level*	Recommended Footcandles (IESNA RP-33-99) <i>(vertical fc measured 6' above grade at property line)</i>
E-1 – Intrinsically Dark Areas	0.1
E-2 – Estate/Rural Areas	0.3
E-3 – Suburban Areas	0.8
E-4 – Urban/Pedestrian Activity Areas	1.5

\* Refer to Design Standards and Policies Manual for general Environmental Zone Locations (E-#). These locations are a guide, but are not conclusive and are subject to the approval of the DRB

## **SUBMITTAL REQUIREMENTS:**

### **EXTERIOR ON SITE LIGHTING DETAILS**

- All exterior fixture lighting manufacture cut sheets (to be provided on 24"x36" paper). Each cut sheet shall clearly identify the light fixture manufacture number utilized, the plan cross-reference identification, and be legible. (State law prohibits Mercury Vapor lighting.)
  - Plan identification symbol or abbreviation
  - Fixture graphic
  - Fixture type
  - Fixture add-ons if utilize
  - Lamp type utilized
  - All photometric data
  - Candela distribution curve

### **PHOTOMETRICS**

- Photometrics plans shall be provided for the entire site addressing Zoning Ordinance, ZN, UP, DRB, Design Guidelines, and the Staff Policy for Site Lighting. Additional information may be required by staff after they have evaluated the design.
- There is a minimum of two photometric studies required for each project. They are (1) the horizontal illuminance on the site, and (2) the vertical light trespass around the perimeter of the site. Each plan requires the following information:
  - A point-by-point foot-candle reading. The horizontal photometric plan grid points, utilizing distinctive grip point symbols (example: \*), shall have a maximum spacing of 10'-0" between each point across the entire site, and 10'-0" past the property line. The vertical photometric plan grid point shall be provided only along the property line with a maximum spacing of 10'-0" between each point.
  - A foot-candle reading shall also be provided under at least one of each light fixture type.
  - The plan shall include the lighting templates generated by the lighting design software program to calculate the foot-candle readings. The template shall be for the fixture and lamp specified on the plans. The plan's fixture type identification shall match the cut sheets, electrical site plans, and the lighting schedule. This information shall be provided in a summary table.
  - The plan shall identify the initial maximum, minimum, and average illuminance on the horizontal photometric plan and vertical photometric plan.
  - The plan shall identify the total maintained maintenance (light loss) factor utilized.

- The total maintained light loss factor for all horizontal photometric analysis shall not be below 0.70.

Plans shall only include one horizontal reading across the entire site. Only the building footprint shall masked out from the reading. (Acceptable additional horizontal reading grids may be: gas station canopies, ATM drive-thrus, walk-up ATMs, and parking garage entries/exits. When separate grids are utilized on the same plan, a separate grid symbol (example: %) must be utilized, and a separate maintained maximum, minimum, average illuminance shall be provide for the grid.)

- The Light Trespass plan (vertical illuminance) shall provide point-by-point foot-candle readings 6'-0" above grade along the entire property line, with the reader at 90-degrees nadir and aimed perpendicular into the site. All light trespass plans reading shall be based on the initial illuminance, 1.00.
- The horizontal illuminance photometric plan, and the vertical light trespass plan may be combined into one sheet if the readings utilize distinctive symbols, a separate summary table for all fixtures utilized, and separate total light loss factures utilized.
- The Photometrics plan shall provide a lighting fixture summary table that presents the following information:
  - Plan identification symbol or abbreviation
  - Fixture type (include the manufacture product identification catalog number)
  - Lamp type (include the manufacture product identification catalog number and wattage)
  - Lamp Lumens
  - Lamp degree Kelvin
  - Fixture lens height above lowest adjacent finished grade
  - Total Light loss facture utilized.